

CLAIMS

[cl001] 1. A method for curing a composite material comprising the steps of:
 providing a curing light that includes
 a wand adapted to be grasped by a human hand for use in positioning
 and manipulating the curing light,
 an elongate heat sink with a proximal end and a distal end, said proximal
 end being proximate said wand, said elongate heat sink having a longitudinal
 axis,
 a mounting platform located at said elongate heat sink distal end, said
 mounting platform being adapted to have a LED chip module mounted on it, and
 an LED chip module mounted on said mounting platform, said LED chip
 module including
 a primary heat sink, said primary heat sink having a smaller mass
 than said elongate heat sink,
 a well on said primary heat sink for mounting an LED chip,
 an LED chip mounted in said well,
 a cover that provides protective covering for said LED chip and
 which permits light emitted by said LED chip to pass through it to provide
 usable light exiting from said light module,
 powering said LED chip with a pulsed current input at power level I in alternating
 periods of generally constant intensity current input to the chip followed by periods of
 rest with no current input,
 permitting light to be output from the curing light at an average power output level
 that resembles a continue wave output in use,
 applying said light to a material to be light cured.

[cl002] 2. A method as recited in claim 1 wherein said average power output
 level is greater than the power output level that would result from powering the same
 chip with a continuous current input at level I instead of pulsed current input.

[cl003] 3. A method as recited in claim 1 wherein said light output from the
 curing light is output at an angle of from about 30 degrees to about 150 degrees with
 respect to said longitudinal axis.

[cl004] 4. A method as recited in claim 1 wherein I is from about 25 milliamps to about 2 amps.

[cl005] 5. A method as recited in claim 1 wherein I is from about 350 milliamps to about 1.2 amps of current.

[cl006] 6. A method as recited in claim 1 wherein I is more than about 100 milliamps of current.

[cl007] 7. A method for curing a composite material comprising the steps of:
providing a curing light that includes
a wand adapted to be grasped by a human hand for use in positioning
and manipulating the curing light, said wand having a longitudinal axis,
a secondary heat sink, said elongate heat sink having a longitudinal axis,
a primary heat sink attached to said secondary heat sink, and
a light emitting semiconductor chip attached to said primary heat sink,
powering said chip with a pulsed current input at power level I in alternating
periods of generally constant intensity current input to the chip followed by periods of
rest with no current input,
permitting light to be output from the curing light at an average power output level
that resembles a continue wave output in use,
applying said light to a material to be light cured.

[cl008] 8. A method as recited in claim 7 wherein said average power output level is greater than the power output level that would result from powering the same chip with a continuous current input at level I instead of pulsed current input.

[cl009] 9. A method as recited in claim 7 wherein said light output from the curing light is output at an angle of from about 30 degrees to about 150 degrees with respect to said longitudinal axis.

[cl010] 10. A method as recited in claim 7 wherein I is from about 25 milliamps to about 2 amps.

[cl011] 11. A method as recited in claim 7 wherein I is from about 350 milliamps to about 1.2 amps of current.

[cl012] 12. A method as recited in claim 7 wherein I is more than about 100 milliamps of current.

[cl013] 13. A method for curing a composite material comprising the steps of:
 providing a curing light that includes
 a wand adapted to be grasped by a human hand for use in positioning
 and manipulating the curing light, said wand having a longitudinal axis,
 a primary heat sink, and
 a light emitting semiconductor chip attached to said primary heat sink,
 a plurality of epitaxial layers in said light emitting semiconductor chip,
 at least one of said epitaxial layers being an active layer,
 powering said chip with a pulsed current input at power level I in alternating
 periods of generally constant intensity current input to the chip followed by periods of
 rest with no current input,
 permitting said current input to said chip to cause photons to be emitted by said
 active layer of said chip,
 permitting said photons to exit the curing light as light, said light output from the
 curing light having an average power output level, and
 applying said light to a material to be light cured.

[cl014] 14. A method as recited in claim 13 wherein said light output has an average power level is greater than the light output power level that would result from powering said chip a continuous current input at level I instead of pulsed current input.

[cl015] 15. A method as recited in claim 13 wherein said light output from the curing light is output at an angle of from about 30 degrees to about 150 degrees with respect to said longitudinal axis.

[cl016] 16. A method as recited in claim 13 wherein I is from about 25 milliamps to about 2 amps.

[cl017] 17. A method as recited in claim 13 wherein I is from about 350 milliamps to about 1.2 amps of current.

[cl018] 18. A method as recited in claim 13 wherein I is more than about 100 milliamps of current.